

An Occasional Drought Is Good For Wetlands!

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Prairie wetlands are among the most productive ecosystems in nature. They are also one of the most dynamic, or at least they were until the last couple of decades. Since the time of the glaciers, prairie wetlands have fluctuated from being brim full to being bone dry, depending upon the unpredictable weather in the Upper Midwest. These fluctuating water levels helped make wetlands one of the most productive habitats in North America. It may seem like a harsh habitat system to survive in, but most of our native wetland wildlife species are well adapted to this boom and bust cycle. In fact, it is the very fluctuations in water levels that make wetlands so productive.

Unfortunately, in the altered landscape in which we currently live, with its sophisticated cropland-drainage systems, most wetlands receive more water now than they need, much more than they did when they were part of a natural prairie-wetland landscape. As a result, they only go dry under the most severe drought conditions. Consequently, they are no longer the dynamic systems they once were. Instead, they are static open water wetlands, many with high fish populations, fish that are now able to survive most winters because the water is consistently deep in the wetlands. According to Weller and Spatcher (1965), wetlands should go through predictable dry-wet cycles on a regular basis. Each cycle has four stages: dry marsh, dense marsh, hemi-marsh, and open marsh. The open marsh or open-water stage has been the norm for most of our wetlands since the flood of 1993. Even though the wetlands are full during this stage, they are not very productive: they have low wildlife diversity and abundance, low emergent and submergent plant populations, low invertebrate populations, poor water clarity, high algae populations, high nutrient levels, and high rough fish populations. Wetlands are much more productive, as Weller and Spatcher (1965) showed, when they are in the hemi-marsh stage, the stage when about half the wetland's surface acres are covered with emergent vegetation and half are open water with submergent vegetation. The unfortunate thing about the wetland cycle is that you cannot achieve the hemi-marsh stage without first going through the dry marsh and dense marsh stages.

Most emergent wetlands plants are well adapted to live within shallow water. However, most seeds of emergent wetland plants will not germinate under water, even if the water is only a few inches deep. Most emergent plant seeds need to a mud flat that is exposed to the sun and air to begin germinating. Droughts, whether natural or man-made, create those conditions.

So this year we are having a natural drought and many of our wetlands are drying up or have dried up. But in the process, their bottom soils have been exposed to the sun and the air. As a result, we have had a lot of new wetland plants germinate in what were previously barren ponds. This is just what most of these wetlands needed. When they refill with water, which history shows they always do unless they are drained, these new plants will flourish and provide an abundance of habitats for a myriad of different wetland wildlife species. Invertebrates will thrive and their burgeoning populations will support a whole host of other wildlife species, including lots of ducks. Without fish to stir up the bottoms or to consume the invertebrates, sunlight will penetrate through the water and enable new submergent plants to germinate and take root. This will provide even more habitat and food for the invertebrate community. With increased invertebrate populations, duck, amphibian, and reptile populations will all increase. Muskrat populations will explode as they use the new fresh plants for food and house-building.

material. All of this activity will help the marsh to move from the dense marsh stage to the hemi-marsh stage, at which point it will have reached the apex of its productivity.

Unfortunately, marshes are not static ecosystems, and as the muskrats eat the plants and the plants age and decay, these marshes will once again revert to the open marsh stage. Fish may return, further compromising water quality and degrading submergent plant communities, and the marsh will remain in this state until the next drought comes along, be it imposed by Mother Nature or through water level management by the DNR.

Literature Cited

Weller, M. W.; Spatcher, C. S. 1965. Role of habitat in the distribution and abundance of marsh birds. Iowa State Univ. Agric. Home Econ. Exp. Stn. Spec. Rep. 43, Ames. 31pp.